7c

L 12384-65   EWP(e)/EPA(s)-2/EWT(m)/EPF(n)-2/EPA(w)-2/EPA(bb)-2/EWP(b)   Pab-10/
ACCESSION NR: AP4048556   Pq-4/Pt-10/Pu-4   S/0286/64/000/019/0032/0032
                           WW/WH

AUTHOR: Kitaygorodskiy, I. I.; Bondarev, K. T.; Barsukov, M. I.;
Lazorenko, V. I.; Minin, V. I.; Mitkevich, G. L.; Parvenkov, G. S.;
Boyko, G. V.

TITLE: Method for manufacturing flat foam pyroceram products.
Class 32, No. 165528

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 19, 1964, 32

TOPIC TAGS: An Author Certificate has been issued for a method of
manufacturing flat foam pyroceram (sitall) products based on glass
made from slag. The glass is heat-treated in two stages in order to
obtain a porous surface, while maintaining a nonporous subsurface.
While the subsurface is being cooled, the surface is heated to
100—150C above the crystallization point to a viscosity not to ex-
ceed 400—500 poise, and maintained under these conditions for 10—30
minutes.

ASSOCIATION: none

Card 1/1

BOYKO, G.Ye.

Mineralogy of ozocerite of the Borislav deposit. Min. sbor.
no.15:285-297 '61.   (MIRA 15:6)

1. Gosudarstvennyy universitet imeni Ivana Franko, L'vov.
            (Borislav region--Ozocerite)

YATSENKO, Ye.F.; BOYKO, G.Ye.; DONTSOVA, G.M.

Higher liquid hydrocarbons in Carpathion ozocerites. Izv.vys.
ucheb.zav.; neft' i gaz 5 no.2:71-75 '62.   (MIRA 15:7)

1. L'vovskiy gosudarstvennyy universitet imeni I. Franko
i Ukrainskiy nauchno-issledovatel'skiy geologorazvedochnyy
institut.
                (Carpathion Mountains--Ozocerite)
                      (Hydrocarbons)

BOYKO, G.Ye.

Mineralogy of ozocerite in the Dzvinyach and Staruni deposits.
Min. sbor. no.16:449-453 '62.   (MIRA 16:10)

1. Gosudarstvennyy universitet imeni Ivana Franko, L'vov.
          (Carpathian Mountain region—Ozocerite)

BOYKO, G.Ye.; KLIMOVSKAYA, L.K.; RYL'TSEV, Ye.V.; TURKEVICH, V.V.; YATSENKO, Ye.F.

Infrared absorption spectra of the higher liquid hydrocarbons of
Carpathian ozocerites. Trudy UkrNIGRI no.5:378-381 '63.

(MIRA 18:3)

ABASHIN, N.; BOYKO, I., bukhgalter-ekonomist.

Surplus staff in the coal industry. Fin. SSSR 19 no.6:63-64 Je '58.
(MIRA 11:6)

1. Nachal'nik Kadiyevskogo gorodskogo finansovogo otdela (for Abashin).

(Kadievka--Coal mines and mining)

BOYKO, I., inzh. (Odessa)

      Frameworks from preassembled reinforced concrete supports. Muk.-elev.
prom. 28 no.6:26-27 Je '62.   (MIRA 15:7)
        (Grain elevators)   (Concrete construction)

PEREMETOV, I., inzh.; BOYKO, I., inzh.; GRIGOR'YEV, N., inzh.

Odessa harbor elevator. Muk.-elev. prom. 28 no.11:10-11 N '62.
(MIRA 16:2)

1. Odesskoye upravleniye khleboproduktov.
(Odessa--Grain elevators)

BOYKO, I., inzh.

Storage place with sloping floors at the Belgorod-Dnestrovskiy
Milling Combine. Muk.-elev. prom. 28 no.10:19-20 O '62.
(MIRA 16:1)

1. Odesskoye oblastnoye upravleniye khleboproduktov.
(Belgorod-Dnestrovskiy--Flour mills)

BOYKO, Ivan Alekseyevich; TEPLYAKOV, G.V., red.

[Svyatogorsk; a brief study on its history and local lore]
Sviatogorsk; kratkii istoriko-kraevedcheskii ocherk. Khar'kov,
Stalinskoe obl.izd-vo. 1959. 105 p.   (MIRA 13:2)
    (Svyatogorsk--History)   (Svyatogorsk--Economic conditions)

Boyko I. D.

USSR /Chemical Technology. Chemical Products   I-21
    and Their Application

    Medicinals. Vitamins. Antibiotics.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32277

Author   : Boyko I.D.

Title   : Drying of Chemico-Pharmaceutical Preparations
    by the Method of Spraying in a Current of
    Heated Air

Orig Pub: Med. prom-st' SSSR, 1955, No 4, 16-19

Abstract: Description of the newly developed design of a
    drying unit which makes it possible to effect
    very rapidly the drying of chemico-pharmaceutical
    preparations (including those that are thermola-
    bile), by the method of spraying in small-diameter
    chambers (about 0.6 m), without altering the

Card 1/3

USSR /Chemical Technology. Chemical Products   I-21
    and Their Application

    Medicinals. Vitamins. Antibiotics.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32277

        sterility or any other property of the prepara-
        tion. The principle of operation of the pro-
        duction unit is essentially the following: air
        heated at 85-145° is admitted under a pressure
        of 1.2-1.5 atmospheres into a purification fil-
        ter and flows therefrom to the upper part of the
        drying chamber, onto an air distributor, where
        a rotary forward motion, along a spiral path,
        is imparted to the flow of air, which on moving
        downward entrains the jet of the solution being
        dried, which is pneumatically sprayed through a
        nozzle. The use of the spraying principle of
        drying simplifies considerably the production
        technology, by eliminating, in particular, the

Card 2/3

USSR /Chemical Technology. Chemical Products   I-21
     and Their Application

     Medicinals. Vitamins. Antibiotics.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32277

          use of flammable solvents and the necessity of
          a subsequent grinding of the dry preparations,
          which lowers the prime cost of the latter. As a
          practical example a description is given of the
          results of drying of Novarsenol, which ensures
          the retention of the standard indices of this
          preparation.

Card 3/3

BOYKO, I.D., BYLINKINA, Ye.S.

Spray drying of antibiotics. Med.prom. 12 no.7:41-46 Jl '58
(MIRA 11:8)
1. Vsesoyusnyy nauchno-issledovatel'skiy institut antibiotikov.
(ANTIBIOTICS)

BOYKO, I.D., POPOVA, L.A.

Use of waste mycelium from antibiotics production for feeding live
stock. Med.prom 12 no.8:59-60 Ag '58   (MIRA 11:9)

1. Iz opyta penitsillinovogo zavoda - g. Debretsen, Vengerskaya
Narodnaya Respublika.
           (FUNGI)
           (FEEDING AND FEEDING STUFFS)

ZHUKOVSKAYA, S.A.; ANNENKOVA, L.A.; BOYKO, I.D.

Use of a jet extractor for the recovery and purification of ery-
thromycin and tetracycline. Med. prom. 13 no.5:26-33 My '59.
(MIRA 12:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
(ANTIBIOTICS) (EXTRACTION APPARATUS)

BOYKO, I.D.

"Study of the Aeration Process as Related to the Phase Contact Surface;
  Methods for Increasing the Efficiency of Aeration Devices."

presented at the 1st Intl Fermentation Symposium, Rome, Italy, 9-14 May 1960.
All-Union Scientific Research Institute of Antibiotics, Moscow.

BOYKO, I.D.; BYLINKINA, Ye.S.

Drying of streptomycin solutions by sublimation. Med.prom. 14
no.1:40-45 Ja '60.   (MIRA 13:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
                    (STREPTOMYCIN--DRYING)

BOYKO, I.D.; ZHUKOVSKAYA, S.A.; FRIDMAN, T.I.

Construction of a cylindrical vacuum filter for hard-to-filter
cultural fluids of antibiotics. Med.prom. 14 no.3:32-38 Mr '60.
(MIRA 13:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
(FILTERS AND FILTRATION)

BOYKO, I.D.; ZHUKOVSKAYA, S.A.; ANNENKOVA, L.A.

Investigation of the aeration process in aeration installations.
1. Aeration by means of mechanical mixers and bublers. Med. prom.
14 no.9:36-41 S '60.   (MIRA 13:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
        (DRUG INDUSTRY—EQUIPMENT AND SUPPLIES)
        (OXYGEN—INDUSTRIAL APPLICATIONS)
                (ANTIBIOTICS)

BOYKO, I.D.; ZHUKOVSKAYA, S.A.; ANNENKOVA, L.A.

Investigation of the aeration process of aerating devices. Part 2: Jet aeration. Med. prom. 14 no. 10:13-15 O '60.   (MIRA 13:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
            (OXYGEN—INDUSTRIAL APPLICATIONS)

ANNENKOVA, L.A.; BOYKO, I.D.; ZHUKOVSKAYA, S.A.

Extraction of terramycin from native solutions with the use
of a jet extractor. Med. prom. 15 no.11:43-45 N '61. (MIRA 15:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
(TERRAMYCIN)

S/243/62/000/007/001/001
I021/I215

AUTHORS: Boyko, I. D., Bylinkina, Ye. S., Terechova, V. F. and Nechayeva, M. G.

TITLE: Extraction of antibiotics from culture fluids without separation of mycelium

PERIODICAL: Meditsinskaya Promyshlennost SSR no. 7, 1962, 18-25

TEXT: Filtration of culture fluids as the first step in extraction of antibiotics is time consuming and results in a loss of 10 to 20% of antibiotics. Better results were obtained by a direct extraction method (Bartels C.R., Kleinman. G., Korzun, J. N. et al., Chem. Eng. Progr. v. 54, 1958, 49; Bartels, C. R., Kleinman G. U., Patent 278631, 1956). This method has been successfully applied for the extraction of streptomycin by filtration through cationites КБ-4П-2 (KB-4P-2) and КБ-2 (KB-2) with the addition of 0.8-1.0% sodium to the culture fluid. This method saves time and increases the yield. There are 4 tables and 3 figures.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov (All-Union Institute of Antibiotics Research).

SUBMITTED: May 19, 1961

Card 1/1

BOYKO, I.D.; BYLINKINA, Ye.S.

        Spray drying of antibiotics. Med. prom. 16 no.2:27-35 F '62.

                                        (MIRA 15:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.

                       (ANTIBIOTICS)

            (BIOLOGICAL PRODUCTS--DRYING)

BOYKO, I.D.; ZHUKOVSKAYA, S.A.

"Industrial centrifuges" by V.I.Sokolov. Reviewed by I.D.Boiko,
S.A.Zhukovskaia. Med.prom. 16 no.5:60-61 My '62. (MIRA 15:9)
(CENTRIFUGES)

BOYKO, I.D.; BYLINKINA, Ye.S.; YAKHONTOVA, L.F.; BRUNS, B.P.

Production of a high quality streptomycin. Med. prom.
15 no.11:38-42 N '61.   (MIRA 15:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
                         (STREPTOMYCIN)

BOYKO, I.D.

Methods for intensifying the production of antibiotics. Med.
prom. 16 no.5:15-21 My '62.   (MIRA 15:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
                        (ANTIBIOTICS)

BOYKO, I.D.; BYLINKINA, Ye.S.; TEREKHOVA, V.F.; NECHAYEVA, M.G.

Isolation of antibiotics from culture liquids without detachment of the mycelium. Med.prom. 16 no.7:18-25 Jl '62.   (MIRA 15:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
   (ANTIBIOTICS)   (CHEMISTRY, MEDICAL AND PHARMACEUTICAL)

BOYKO, I.D.; POPOVA, L.A.

Production of antibiotics in France. Med. prom. 17 no.9:58-62 S¹
63.
                                                    (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.

L 6282b-

ACCESSION NR: AP5012909

UR/0286/65/000/012/0057/0057

615.779.9.002.2—7

AUTHOR: Boyko, I. D.

TITLE: A device for extracting antibiotics by the ion exchange method. Class 30, No. 171984

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 12, 1965, 57

TOPIC TAGS: ion exchange resin, eluate, antibiotic

ABSTRACT: This Author's Certificate introduces: 1. A device for extracting antibiotics by the ion exchange method. The device is designed for continuous production of an eluate with a constant high concentration at neutral pH. The unit is made in the form of a rotating drum with circular helical sections inside it. These sections are set up in such a way that the ion exchange resin is moved through the sections along the generatrix of the drum as the drum is rotated. 2. A modification of this device in which the circular helical sections are sequentially connected into groups in such a way that the working fluid (which enters from a separate pipe-line for each group) is fed against the flow of the ion exchange resin moving in

Card 1/3

L 62826-65

ACCESSION NR: AP5019026

the drum as it is rotated. 3. A modification of this device which has lateral sections in the form of slots or trapezoidal pockets. The walls of these sections are staggered and located lower than the helical section walls. 4. A modification of this device which has a false bottom with a grid in the lower part of the sections. The cavity formed by the false bottom is connected with the lateral sections. 5. A modification of this device which has drain sections connected with the eluate collector and with the corresponding traps.

ASSOCIATION: none

SUBMITTED: 18Aug62   ENCL: 01   SUB CODE:

NO REF SOV: 000   OTHER: 000

Card 2/3

BOYKO, I.I., insh.

Testing a veneer peeling lathe with automatic knives. Der.
prom. 8 no.9:24-25 S '59.

(MIRA 12:12)

1. Mostovskiy fanerno-derevoobrabatyvayushchiy kombinat.
(Veneers and veneering)

BOYKO, I.I.

On the theory of the mobility of electrons in semiconductors.
Fiz. tver. tela 1 no.4:574-578 '59.
(MIRA 12:6)

1.Moskovskiy gosudarstvennyy universitet, Fizicheskiy fakul'tet.
(Semiconductors) (Electrons)

24.7600

AUTHORS: Boyko, I. I., Rashba, E. I., Trofimenko, A. P.

TITLE: Thermally Stimulated Conductivity of Semiconductors

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 109-117

TEXT: The theory of thermally stimulated conductivity was established on the basis of a sufficiently general semiconductor model (Fig. 1). It is shown that the depth of the local level can be determined by studying the curves of thermally stimulated conductivity at different rates of heating. A preliminary comparison was made between theory and experiment. CdS samples with an admixture of Au were investigated. The gold was introduced at 550-650°C. Measurements were made by means of an apparatus described in Ref. 5. The rate of heating could be changed within the range 0.5 ÷ 1.5 deg/sec. Three peaks of thermally stimulated conductivity were found in the samples under consideration. At a heating rate of v = = 0.5 deg/sec, the peaks are found at 110, 240, and 290°K approximately. The relative values of the high-temperature maxima changed considerably from sample to sample (Fig. 2). The 240°K peak of that sample which did

Card 1/2

Thermally Stimulated Conductivity of
Semiconductors

S/181/60/002/01/24/035
B008/B014

not show the highest high-temperature maximum was studied in detail. From
this the authors concluded that the temperature dependence of β and τ is
negligible. Fig. 3 illustrates the determination of the adhesion level
from measuring points. ε is determined by the slope of the straight.
They yield almost the same values of the activation energy $\varepsilon = 0.34$ ev.
Fig. 4 shows curves representing the electron concentration $n(T)$ for three
values of v. As may be seen, there is satisfactory agreement between
theory and experiment. The greatest divergencies occurred at the end of
the $n(T)$ curves within the low-temperature range. The dependence on
$n(T) \sim \exp\left(-\frac{\varepsilon}{kT}\right)$ found in experiments was considerably smaller than
that predicted by theory. This is probably due to the fact that the
sample had a smaller number of centers the activation energy of which
was somewhat below 0.34 ev. It was theoretically found (equation (27))
that the recombination near the $n(T)$ maximum was mainly monomolecular.
The authors thank Engineer A. I. Sheretun for having prepared the samples.
There are 4 figures and 5 references, 2 of which are Soviet.

Card 2/2   Physics Inst. AS UKR SSR

83000
S/181/60/002/008/019/045
B006/B070

24.2600

AUTHOR: Boyko, I. I.

TITLE: The Problem of the Role of Adhesion Centers in the Process
             of Relaxation of Photoconductivity

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1835-1840

TEXT: One of the most important methods of measuring the relaxation
time is based on the investigation of the decrease of the concentration
of minority carriers after illumination is switched off. But the
existence of traps, which may be interchanged with the current carriers
from the conduction band, disturbs the falling-off curves and leads to
difficulties in the interpretation of the experimental data. S. M.
Ryvkin has several times pointed to this fact. But, it may be assumed
that a measurement of the recombination time measured according to the
first part of the falling-off curve with sufficient accuracy excludes
the trap-induced distortions. In the present work the author investigates
the falling-off curves of the photoconductivity without the restrictive

Card 1/3

83000

The Problem of the Role of Adhesion Centers   S/181/60/002/008/019/045
in the Process of Relaxation of   B006/B070
Photoconductivity

assumption that the filling of the adhesive centers with electrons be
insignificant. He is able to show that the form of all the investigated
falling-off curves gives satisfactory data on the character of the
recombination and adhesion. An n-type semiconductor is then considered
whose energy diagram is characterized by one series of adhesion levels.
The drop of the photocurrent after switching-off of the illumination is
described by the system of equations (1a,b), and the recombination time
of the band electrons by (2). The equation is treated under the
assumption that the lifetime of an electron on the adhesion level is
very large compared to its lifetime in the conduction band. The process
of the drop of current may then be split up into two stages characterized
by two very different instantaneous falling-off times. The first stage is
dominated by a rapid disappearance of the electrons from the conduction
band on account of recombination. Here the traps have no opportunity of
discharge. The second stage occurs for sufficiently small concentrations
of the band electrons, when the electrons from the conduction band are
trapped by traps and recombination centers - a process which is almost

Card 2/3

83000

The Problem of the Role of Adhesion Centers   S/181/60/002/008/019/045
in the Process of Relaxation of   B006/B070
Photoconductivity

completely compensated by the new appearance of electrons which are
thermally released from the traps. From the electron concentration $n(t)$,
an approximate equation is obtained, and relations for the reciprocal
lifetimes τ_1 and τ_2 are given. The course of these reciprocal times as
functions of electron concentration, temperature, and reciprocal
temperature is shown in a series of diagrams. Some of the characteristic
parameters of the model considered here can be determined according to
the method of thermally stimulated conductivity. A comparison of the
parameters so obtained with the corresponding experimental values gives
information on the limits of applicability of the model. The author
thanks Academician of the AS UkrSSR V. Ye. Lashkarev for his interest,
and E. I. Rashba for guiding the work. There are 3 figures and 3 Soviet
references.

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics of the
               AS UkrSSR, Kiyev)

SUBMITTED: January 3, 1960

Card 3/3

83008

S/181/60/002/008/027/045
B006/B063

24.7900

AUTHORS: Boyko, I. I., Rashba, E. I.

TITLE: The Properties of Semiconductors With a Loop of Extrema.
                II. Magnetic Susceptibility in a Field Perpendicular to
                the Loop Plane

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8,
                pp. 1874 - 1883

TEXT: Following two preceding papers (Refs. 1 and 2), the present paper
gives a theory for the magnetic susceptibility of semiconductors the
extrema of which lie on a loop. The depth, Δ, of this loop depends on
various factors, and varies from $\sim 10^{-5}$ to 10^{-3} ev. Therefore, the present
paper deals with some special cases. The free energy of the carriers in
the band is calculated without considering the change in the free energy,
which is related to a possible redistribution of the carriers between
the conduction band and the impurity levels. First, the authors study
the magnetic susceptibility in a non-degenerate electron gas in a general
way, after which expressions are derived for the following special cases:

Card 1/2

83008

The Properties of Semiconductors With a Loop   S/181/60/002/008/027/045
of Extrema. II. Magnetic Susceptibility in a   B006/B063
Field Perpendicular to the Loop Plane

a) high temperatures ($\Delta \ll kT$); b) weak magnetic fields ($\Delta \ll \hbar\omega^*$); c) low
temperatures; weak magnetic fields ($kT \ll \Delta$; $\hbar\omega^* \ll \sqrt{kT\Delta}$); d) arbitrary
temperatures; extremely weak magnetic fields ($\% \to 0$). The next section
deal: with the susceptibility of a degenerate electron gas in the case
of weak fields. The "oscillations" of magnetic susceptibility are
studied next for a) a low carrier concentration and b) a high carrier
concentration. The peculiarities occurring due to the presence of a
range of negative effective mass and the existence of two close-lying
Fermi surfaces are then examined. These peculiarities lead to charac-
teristic pulsation phenomena. Such pulsations are expected to occur also
in other crystals (not only in hexagonal CdS, which is under considera-
tion) as, e.g., in chemical compounds with metal-type conductivity and
degenerate semiconductors, i.e., in crystals without inversion centers.
Mention is made of V. I. Sheka and L. D. Landau. There are 6 references:
5 Soviet and 1 British.

Card 2/2   2   *Inst. Physics AS Ukr SSR*

AUTHORS: Rashba, E. I. and Boyko, I. I.

TITLE: The properties of semiconductors with an extremum loop. III.
                The behavior in a magnetic field parallel to the plane of the
                loop

PERIODICAL: Fizika tverdogo tela, v. 3, no. 4, 1961, 1277-1289

TEXT: This rather comprehensive article is the continuation of two previous
papers in which the authors published a theory of cyclotron resonance and
combined resonance, as well as of magnetic susceptibility (FTT, II, 1224 and
1874, 1960) for semiconductors with a loop of extrema (cf. FTT, sb., II, 162,
1959) in the case of a $\vec{H}$-field perpendicular to the loop plane. The same ef-
fects have been studied for an $\vec{H}$-field parallel to the loop plane. The first
section of the paper deals with the quasi-classical wave functions and the
conditions of quantization. The authors proceed from the matrix Hamiltonian
of a band electron in the field $\vec{H}\|$ x lying in the loop plane:

Card 1/9

22063

The properties of ...

$$H = \left\| \begin{matrix} A(k_x^2 + k_y^2) + Bk_z^2 & iak_- + \beta_0 \mathcal{H} \\ -iak_+ + \beta_0 \mathcal{H} & A(k_x^2 + k_y^2) + Bk_z^2 \end{matrix} \right\|; \qquad (1)$$

In contrast to the case where the field is perpendicular to the loop plane, neither the spectrum nor the exact wave functions can be determined in the case of a parallel field, and therefore a quasi-classical treatment of the (two-component) functions is chosen. The $\hat{k}$-operators are replaced by operators with

$$\pi_{x,y} = \sqrt{\frac{c}{e \mathcal{H}}} \sqrt[4]{\frac{A}{B}} \hbar k_{x,y}, \quad \pi_z = \sqrt{\frac{c}{e \mathcal{H}}} \sqrt[4]{\frac{B}{A}} \hbar k_z \qquad (2)$$

Since $[\hat{k}_y, \hat{k}_z] = -ie\mathcal{H}/\hbar c$, the commutative relation $[\pi_y, \pi_z] = -i\hbar$ holds for the new operators. With the notations $m_0 = \sqrt{m^* m_B}$, $\omega_0 = e\mathcal{H}/m_0 c$, $b = \hbar m_0/2m$, $E = (E - Ak_x^2)/\omega_0$, $\pi_{\pm} = \pi_x \pm i\pi_y$ the authors obtain the Schrödinger equation

$$H_1 F = \left\| \begin{matrix} \frac{1}{2}(\pi_y^2 + \pi_z^2) & b + i\sqrt{\frac{2A}{\omega_0}} \pi_- \\ b - i\sqrt{\frac{2A}{\omega_0}} \pi_+ & \frac{1}{2}(\pi_y^2 + \pi_z^2) \end{matrix} \right\| F = EF; \quad F = \begin{pmatrix} f_1 \\ f_2 \end{pmatrix}. \qquad (3)$$

Card 2/9

The properties of ...

where $f_1 =$ exp (iσ/h) and $f_2 =$ exp(iφ/h). With $\pi_z =$ ih $\frac{\partial}{\partial \pi_y}$ one finds

$$\left[\frac{\pi_y^2}{2}+\frac{1}{2}\left(\frac{d\sigma}{d\pi_y}\right)^2-\frac{ih}{2}\frac{d^2\sigma}{d\pi_y^2}-E\right]e^{\frac{i}{h}\sigma}+\left[b+i\sqrt{\frac{2\Delta}{\omega_0}}\pi_-\right]e^{\frac{i}{h}\varphi}=0,$$
$$\left[b-i\sqrt{\frac{2\Delta}{\omega_0}}\pi_+\right]e^{\frac{i}{h}\sigma}+\left[\frac{\pi_y^2}{2}+\frac{1}{2}\left(\frac{d\varphi}{d\pi_y}\right)^2-\frac{ih}{2}\frac{d^2\varphi}{d\pi_y^2}-E\right]e^{\frac{i}{h}\varphi}=0.$$

(5)

As usual, σ and φ are expanded in power series of h/i, which results in a sequence of systems of equations for the determination of σ_i and φ_i. Setting $\sigma_0 = \varphi_0$ and $\xi = \exp(\varphi_1-\sigma_1)$ one obtains the following solution of the zero-order system:

$$\frac{1}{2}\left(\frac{d\sigma_0^{\mp}}{d\pi_y}\right)^2=-\frac{\pi_y^2}{2}+E\pm\left|b+i\sqrt{\frac{2\Delta}{\omega_0}}\pi_-\right|,$$

(8)

$$\xi^{\mp}=\mp\frac{\left|b+i\sqrt{\frac{2\Delta}{\omega_0}}\pi_-\right|}{b+i\sqrt{\frac{2\Delta}{\omega_0}}\pi_-}=\mp\theta.$$

(9)

Card 3/9

The properties of ...

Finally, in quasi-classical approximation,

$$F = C_1 \frac{\cos\frac{\sigma_0^-}{\hbar}}{\sqrt{\frac{d\sigma_0^-}{d\pi_y}}} \left(\begin{array}{c} \frac{1}{\sqrt{\delta}} \\ -\sqrt{\delta} \end{array} \right) + C_2 \frac{\cos\frac{\sigma_0^+}{\hbar}}{\sqrt{\frac{d\sigma_0^+}{d\pi_y}}} \left(\begin{array}{c} \frac{1}{\sqrt{\delta}} \\ \sqrt{\delta} \end{array} \right); \qquad (12)$$

is obtained from Eqs. (8) and

$$e_1^{\mp} = \frac{1}{\sqrt{\xi^{\mp}\frac{d\sigma_0^{\mp}}{d\pi_y}}}, \quad e_1^{\mp} = \sqrt{\frac{\xi^{\mp}}{\frac{d\sigma^{\mp}}{d\pi_y}}}. \qquad (10)$$

Confining themselves, to weak magnetic fields (b = 0), the authors then examine the condition under which quasi-classical approximation is applicable to some types of classical trajectories. Moreover, the conditions of quantization are discussed; among other things, the authors obtain a normalized quasi-classical wave function of the following form:

$$F_{\mp}(\pi_y) = \sqrt{\frac{2\nu_{\mp}}{\omega_0\pi_y^{\mp}}} \left(\begin{array}{c} \frac{1}{\sqrt{\delta}} \\ \mp\sqrt{\delta} \end{array} \right) \cos\left(\frac{1}{\hbar} \int_{\pi_{y1}^{\mp}}^{\pi_y} \pi_j^{\mp}(\pi_y) d\pi_y - \frac{\pi}{4} \right). \qquad (21)$$

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Here, $\tau_{y1}^{\mp}$ and $\tau_{y2}^{\mp}$ are the left and the right pivot, and $\nu_{\mp}$ is the classical angular frequency of the respective branches. The second section is devoted to the isoenergetic sufaces. First, the cases $E > 0$ and $E < 0$ are examined. For $E > 3\Delta$ Fig. 2 shows sections through the isoenergetic surfaces, formed by intersection with the planes k_x = const. In the third section, the authors study the oscillating part χ_{osc} of magnetic susceptibility at $-\Delta \leqslant \zeta \leqslant 0$ and $\jmath = 1/2$, using the formula of I. M. Lifshits and A. M. Kosevich:

$$\chi_{osc} = -\frac{kT}{\pi\hbar^2\mathcal{H}}(\zeta + \Delta)\left(\sqrt{\frac{\Delta}{|\zeta|}} - 1\right)^{-\frac{1}{2}}\left(\frac{em_0m^*}{c\hbar\mathcal{H}}\right)^{\frac{1}{2}}\sum_{\nu=1}^{\infty}\frac{(-)^\nu}{\sqrt{\nu}} \times$$

$$\times \frac{\sin\left(2\pi\nu\frac{\zeta+\Delta}{\hbar\omega_0} + \frac{\pi}{4}\right)}{\sh\left(2\pi^2\nu\frac{kT}{\hbar\omega_0}\right)}. \qquad (29)$$

In the fourth section, cyclotron resonance is discussed; for the conductivity $\sigma(\omega)$ at $E < 0$ and $\omega_0\tau \gg 1$, the authors obtain

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$$\sigma(\omega) = a\tau \frac{|\zeta|(\Delta+\zeta)}{\sqrt[4]{\Delta|\zeta|}} \frac{1}{\sqrt{\omega_0\tau}} \frac{\sqrt{\sqrt{1+\tau^2(\omega_0-\omega)^2}+\tau(\omega_0-\omega)}}{\sqrt{1+\tau^2(\omega_0-\omega)^2}} , \qquad (31)$$

For $\tau \longrightarrow \infty$, the expression

$$\sigma(\omega) \sim \left|\frac{\omega_0}{\omega-\omega_0}\right|^3 \exp\left\{-\left(\frac{2}{\pi}\right)^2 \frac{\Delta}{kT}\left(\frac{\omega_0}{\omega-\omega_0}\right)^2\right\} ; \qquad (32)$$

follows. The fifth section describes an investigation of band-to-band transitions. By approximation,

with

$$H_y = \frac{e}{c}\mathcal{A}_y \begin{vmatrix} \sqrt{\frac{\omega_0}{m^*}}\pi_y & \frac{e}{\hbar} \\ \frac{e}{\hbar} & \sqrt{\frac{\omega_0}{m^*}}\pi_y \end{vmatrix} , \quad H_z = \frac{e}{c}\mathcal{A}_z \begin{vmatrix} \sqrt{\frac{\omega_0}{m^*}}\pi_z & 0 \\ 0 & \sqrt{\frac{\omega_0}{m^*}}\pi_z \end{vmatrix} . \qquad (33)$$

$$(F_{n+}, H_i F_{n-}) = \frac{-2e e}{i c \hbar \omega_0} \sqrt{2\pi\hbar v_{n^+}v_{n^-}} \frac{\pi_0}{\pi_\perp\pi_s}\left|\frac{d\pi_s^+}{d\pi_y} - \frac{d\pi_s^-}{d\pi_y}\right|^{-\frac{1}{2}} \varphi_{n+}\mathcal{A}_{yi} \qquad (35)$$

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is obtained. The respective intersections of the phase trajectories can be seen from Fig.4. The Eqs.

$$\frac{dx_i^-}{dx_y} - \frac{dx_i^+}{dx_1} = 2 \frac{x_0}{x_\perp} \frac{x_y}{x_s}, \quad \text{где} \quad x_0 = \sqrt{\frac{e}{eX}} \sqrt[4]{\frac{A}{B}} \hbar k_0. \qquad (38)$$

and

$$(F_{a+}, H_l F_{a-}) = \frac{-2ea}{lch\omega_0} \sqrt{x\hbar v_{a+} v_{a-}} \frac{x_0}{\sqrt{x_0 x_\perp |x_s||x_y|}} \varphi_{a+} \varphi_{a-}. \qquad (39)$$

hold at the intersections of the trajectories. There are 4 figures and 13 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The most recent reference to an English-language publication reads as follows: F. Stern, J. Phys. Chem. Sol. 8, 277, 1959.

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics, AS UkrSSR, Kiyev)

SUBMITTED: October 6, 1960

Card 7/9

25681
S/181/61/003/007/003/023
B102/B202

AUTHOR: Boyko, I. I.

TITLE: Optical properties of semiconductors with loops of extrema

PERIODICAL: Fizika tverdogo tela, v. 3, no. 7, 1961, 1950 - 1953

TEXT: Since deviations from the quadratic law of dispersion cause changes
of the energy state density (see E. I. Rashba and V. I. Sheka, FTT, Sb. 2,
162, 1959) the possibility arises, under certain conditions described
in this paper, to "identify" the loops of extrema via an investigation
of the shape of the optical long-wave absorption edge. The case of
light absorption by free carriers accompanied by direct band-to-band
transitions seems to be the most favorable. The participation of phonons
in indirect transitions and the effect of Coulomb interaction on the
absorption of light accompanied by electron-hole pair production may
strongly distort the spectrum near the absorption threshold if the region
of considerable deviation from the quadratic law of dispersion is not
sufficiently large. The author first considers light absorption by free
carriers accompanied by direct band-to-band transitions. The transition

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from the electron band 1, with the dispersion law $E_1 = Ak_\perp^2 + Bk_z^2 \pm \alpha k_\perp$ to

the higher level 2, with the dispersion law $E_2 = A_2 k_\perp^2 + B_2 k_z^2 + \epsilon$ is studied where ϵ is the distance between the bands at the point $k = 0$. The band-to-band transition of holes is studied in the same way. The case $A_2 > A$, $B_2 > B$ is the most interesting one if the absorption edge is connected with transitions taking place in the proximity of the point $\vec{k} = 0$. In the opposite case, the absorption threshold is connected with transitions which are far away from $\vec{k} = 0$. When proceeding according to Ref. 6, $K(\omega) = \Gamma \left\{ (K_1(\omega) \, \vartheta \, (\hbar\omega - \epsilon + \delta) + K_2(\omega) \, \vartheta \, (\hbar\omega - \epsilon) \right\}$, (2), is obtained for

the absorption coefficient where is the frequency of the incident light and $\vartheta(x) = \begin{cases} 1 \text{ for } x > 0 \\ 0 \text{ for } x < 0 \end{cases}$, $\delta = \alpha^2/4(A_2 - A)$; Γ is a constant of the same order of magnitude as in the case of a quadratic dispersion law. If the transition at $\vec{k} = 0$ is allowed,

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γ

Optical properties ...

$$K_1(\omega) = \frac{\pi}{2} \frac{a}{2(A_2 - A)},$$

$$K_2(\omega) = \sqrt{\frac{\hbar\omega - \epsilon}{A_2 - A}} - \frac{a}{2(A_2 - A)} \arcsin \sqrt{\frac{\hbar\omega - \epsilon}{\hbar\omega - \epsilon + \delta}}.$$

$$\quad (3)$$

$$\hbar\omega \sim \epsilon \quad K_2(\omega) \simeq \frac{4}{3} \frac{\sqrt{A_2 - A}}{a^2} (\hbar\omega - \epsilon)^{3/2}.$$

holds. With increasing frequency, $K(\omega)$ tends to $\frac{\Gamma}{\sqrt{A_2 - A}} (\hbar\omega - \epsilon)^{1/2}$,

i. e., the result known for a quadratic dispersion law is obtained.
For transitions forbidden at $\vec{k} = 0$, $K_1(\omega) \sim [(\hbar\omega - \epsilon + \delta) + D]$, where

D is a constant of the order of δ. For a wurtzite-type crystal

$D = 2\delta/3$. At $\hbar\omega - \epsilon \gg \Delta$, $K(\omega) \sim (\hbar\omega - \epsilon)^{3/2}$. As may be seen, the effect
of the loops of the extrema consists in a decrease of the exponent of
the $K(\omega)$ law by half its value as compared to the case of the quadratic
dispersion law in the frequency range $\frac{1}{\hbar}(\epsilon - \delta) \div \frac{1}{\hbar}\epsilon$ where $\epsilon - \delta$ is

the minimum distance between the bands. If band 1 lies above band 2
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        4

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S/181/61/003/007/003/023
B102/B202

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and if $A > A_2$, $B > B_2$ the above facts hold accurately up to a constant if $(A_2 - A)^2$ is replaced by $(A - A_2)$ and $(B_2 - B)$ by $(B - B_2)$. The formulas hold, up to a constant, also for direct band-to-band transitions accompanied by an electron-hole pair production if the Coulomb interaction of electrons and holes is negligible. In the case of indirect transitions accompanied by electron-hole pair production an expression of the form (2) is obtained for $K(\omega)$ where, however, $\delta = \alpha^2/4A = \Delta$. For allowed transitions $K_1(\omega) \sim (\hbar\omega - \epsilon + \Delta)^{3/2}$ and at $\hbar\omega - \epsilon \gg \Delta$, $K(\omega) \sim (\hbar\omega - \epsilon)^2$ is obtained. For forbidden bands two cases are possible: a) band-to-band transition is primary, scattering from a phonon is secondary and b) inverse case. The expressions obtained for $K(\omega)$ differ in both cases. The author thanks E. I. Rashba for having supervised the studies. There are 1 figure and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc. The references to English-language publications read as follows: Ref. 5: R. Elliot. Phys. Rev. 108, 1384, 1957; Ref. 6: J. Bardeen, F. Blatt, A. L. Hall, Photo-conductivity Conference h. a. Atlantic City in 1954, N. Y. 1956;

Card 4/0   _Inst Semiconductors, AS UkrSSR_
     4

39971

S/181/62/004/008/015/041
B125/B102

AUTHOR: Boyko, I. I.

TITLE: Combined resonance in semiconductors with inversion center

PERIODICAL: Fizika tverdogo tela, v. 4, no. 8, 1962, 2128-2136

TEXT: Formulas relating to the scheme shown in Fig. 1 are derived,
including the resonance transitions the matrix elements

$$\langle n^+ | \hat{V}_\pm | n^- \rangle =$$ (7)

$$= \mathcal{H}(D_x)_{n^+ n^-} \left\{ -\sqrt{\frac{e\mathcal{H}}{2ch}} \sqrt[4]{\frac{U_{rr}}{U_{xx}}} \left(\frac{\omega_\mp}{\hbar\omega_0 + 2\xi\mathcal{H}} + \frac{\omega_\pm}{\hbar\omega_0 - 2\xi\mathcal{H}} \right) + \frac{1}{\hbar} \right\} +$$

$$+ i\mathcal{H}(D_y)_{n^+ n^-} \left\{ \sqrt{\frac{e\mathcal{H}}{2ch}} \sqrt[4]{\frac{U_{xx}}{U_{rr}}} \left(\frac{\omega_\mp}{\hbar\omega_0 + 2\xi\mathcal{H}} - \frac{\omega_\pm}{\hbar\omega_0 - 2\xi\mathcal{H}} \right) \pm \frac{1}{\hbar} \right\}.$$

for the transitions in silicon, and more complex matrix elements for
those in germanium. Their starting point are the effective Hamiltonians
of silicon and germanium for a left-hand circularly polarized electro-
magnetic field with the vector potential

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Combined resonance in ...

$\vec{U} = U_0(\vec{i}\cos\omega t + \vec{j}\sin\omega t)\cos QZ$ (4) which is perpendicular to the static magnetic field (Q being the wave vector of the high-frequency field, $Z\|\vec{H}$). One summand of the perturbation Hamiltonian, corresponding to the vector potential (4), describes the direct interaction of electron spin and magnetic vector of the radiofrequency wave. It also describes the ordinary paramagnetic resonance with the free carriers. The second summand describes cyclotron and combined resonance. The paramagnetic resonance transitions are most intense at the frequency $(E_{n^+} - E_{n^-})/\hbar$(for $n^+\rightleftarrows n^-$). In the present approximation Ge also has transitions $n^+\rightleftarrows n^- \pm 1$ which are additional to the transitions $n^+\rightleftarrows n^-$, at the frequencies $|\omega_{par} \mp \omega_{cycl}|$, where ω_{par} is the frequency of paramagnetic resonance and ω_{cycl} is the frequency of cyclotron resonance. The triplet intensities of the combined resonance of Ge have the same order of magnitude. In (7) $\hat{V}_+$ is the complex velocity operator, D is the representation of the group of rotations and $\omega_0 = (2eH/\hbar^2 c)\sqrt{U_{XX}U_{YY}}$ and

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Combined resonance in ...

and $\xi = \frac{1}{2} \beta_0 \sqrt{(g^{11})^2 + |g^{12}|^2}$. The matrix elements for the transitions in silicon and germanium are calculated also for the vector potential $\vec{U} = U_0 \vec{K} \cos\omega t \cos QY$ (high-frequency field) and for the vector potential $\vec{U} = U_0 \vec{i} \cos\omega t \cos QY$. The magnetic wave vector is polarized parallel to the static magnetic field. Fig. 2 roughly shows the intensity of combined resonance as a function of the static field direction with respect to the crystal axes. At the frequencies ω_{par} and $|\omega_{par} \pm \omega_{cycl}|$ germanium has three distinct resonance peaks with intensities of the same order of magnitude. In semiconductors with inversion centers the perturbation theory applies independently of the magnetic field strength. There are 2 figures.

ASSOCIATION: Institut poluprovodnikov AN USSR, Kiyev (Institute of Semiconductors AS UkrSSR, Kiyev)

SUBMITTED: March 20, 1962

Card 3/ 2

L 21133-65   EWT(1)/EEC(t)   Pob   IJP(c)/ASD(a)-5/SSD/AF-L/AS(mp)-2/AFWTR/
RAEM(a)/RAEM(i)/ESD(gs)   GG

ACCESSION NR: AP5001548   S/0185/64/009/012/1286/1290

AUTHOR: Boyko, I. I.

TITLE: On the width of combined resonance bands

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 9, no. 12, 1286-1290

TOPIC TAGS: spin resonance, cyclotron resonance, band width, paramagnetic re-
sonance, crystal symmetry, semiconductor crystal structure

ABSTRACT: The factors governing the width of the bands of combined resonance
with the band carriers are analyzed. The matrix Hamiltonian is expressed as a
sum of terms corresponding to the configurational and spin motions of the electron
in the crystal and the spin Hamiltonian component perpendicular to longitudinal
conductivity is diagonalized. The interaction operator is likewise transformed
and resolved into a current operator whose diagonal part describes cyclotron re-
sonance and the nondiagonal part describes combined resonance. It is then shown
that in semiconductors with inversion center the spin-resonance band width is
usually relativistically small, whereas the cyclotron-resonance width is deter-
mined by the nonrelativistic interaction. In crystals without symmetry center

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L 21133-65
ACCESSION NR: AP5001548

the relativistic parameter governing the width of the spin band ceases to be small
and in some cases can become equal to the cyclotron resonance band. At the same
time the intensity of combined resonance can become of the same order as the
cyclotron resonance intensity. "The author thanks E. Y. Rashba for a discussion."
Orig. art. has: 10 formulas.

ASSOCIATION: Institut napivprovidnykiv AN URSR (Institute of Semiconductors, AN
UkrSSR)

SUBMITTED: 18Mar64   ENCL: 00

SUB CODE: SS, NP   NR REF SOV: 002   OTHER: 001

Card 2/2

DADENKOVA, M.N.; BOYKO, I.I.; YEFIMENKO, I.N.

Molecular scattering of light and its relation to the structure of
polymer solutions placed in an electric field. Ukr. fiz. zhur. 9 no.
5:559-563 My '64.   (MIRA 17:9)

1. Ukrainskaya sel'skokhozyaystvennaya akademiya, Kiyev.

RASHBA,E.I.; BOYKO, I.I.

Kinetics of conductivity electrons in a variable electric field.
Ukr. fiz. zhur. 10 no.1:113-114   Ja '65.   (MIRA 18:4)

1. Institut poluprovodnikov AN UkrSSR, Kiyev.

L 2205-66   EWT(l)/EWT(m)/T/EWP(t)/EWP(b)/EWA(h) IJP(c) JD/AT
ACCESSION NR: AP5017335   UR/0181/65/007/007/2239/2242

AUTHOR: Boyko, I. I.; Zhad'ko, I. P.; Rashba, E. I.; Romanov, V. A.

TITLE: Occurrence of non-equilibrium carriers when current passes through elastically deformed germanium

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2239-2242

TOPIC TAGS: germanium, semiconductor carrier, elastic deformation

ABSTRACT: This is a continuation of earlier work (FTT v. 6, 3247, 1964), where it was shown that under certain conditions current flowing through homogeneous organic crystals with anisotropic electric conductivity can give rise to non-equilibrium carriers and to a nonlinear volt-ampere characteristic. The present investigation was devoted to an experimental observation of this effect. The relation between the field intensity and the current density is derived theoretically for this case. The experiments, performed on high-resistivity germanium (40 Ω-cm at 300K), in which the anisotropy was produced by homogeneous compression, resulted in characteristics which were very similar to those derived theoretically. "The authors thank V. Ye. Lashkarev, G. Ye. Pikus, and M. K. Sheynkman for a discussion and V. V. Pakhomov for participating in the calculations." Orig. art. has: 2 figures and 3 formulas.

Card 1/2

L 2205-66
ACCESSION NR: AP5017335   3

ASSOCIATION: Institut poluprovodnikov AN UkrSSR, Kiev (Institute of Semiconductors
AN UkrSSR)

SUBMITTED: 22Feb65   ENCL: 00   SUB CODE: SS

NR REF SOV: 002   OTHER: 000

Card 2/2   DP

L 15161-66   EWT(1)/T/EWA(h)   IJP(c)   AT

ACC NR: AP6002024   **SOURCE CODE:**   UR/0185/65/010/012/1309/1321

AUTHOR: Boyko, I. I.

ORG: Institute of Semiconductors, AN UkrSSR, Kiev (Instytut napivprovidnykiv AN URSR)

TITLE: Many-band quasiclassical wave functions in semiconductors in the presence of an external constant magnetic field

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 12, 1965, 1309-1321

TOPIC TAGS: wave function, semiconductor band structure, conduction electron, Schrodinger equation , Hamiltonian, external magnetic field, constant magnetic field

ABSTRACT: The Hamiltonian of the band electron in an external constant magnetic field is expressed in the form of a matrix in the many-band formalism of the effective-mass method; the elements of the matrix constituted by the wave functions are sought in the form of a series in ascending powers of Planck's constant. For simplicity only terms quadratic in the quasimomentum or containing a combination of the quasimomentum and the external magnetic field are considered. To find the correct phases of the obtained wave functions, they must be matched with the exact solutions near points where the conditions for the applicability of the quasiclassical approximation are violated. In the

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ACC NR: AP6002024   /

case of the matrix Hamiltonian the usual procedure of expanding the
potential energy in a series in powers of the distance from the indi-
cated points does not lead to the desired result. The procedure was
therefore modified and the matrix Schrodinger equation reduced to a
second-order equation to which the usual procedure could be applied.
The solution yields an exact function; subsequent matching yields the
phases of the quasiclassical functions and the quantization of the
energy. An example is discussed of the wave functions and energy
spectrum of the band electron in semiconductors with extremum loops for
motion in the vicinity of a self-intersecting orbit. The results agree
with those of other workers. Author thanks E. Y. (E.I.) Rashba for
attention and valuable advice. Orig. art. has 48 formulas.

SUB CODE: 20/ SUBM DATE: 07Jan65/ ORIG REF: 008/

FW
Card 2/2

ACC NR: AP7000365   SOURCE CODE: UR/0413/66/000/022/0140/0140

INVENTOR: Mashnikov, Yu. I.; Lebedev, O. N.; Treskov, V. V.; Rozenberg, M. M.;
Bakulin, A. I.; Boyko, I. I.; Krupenya, B. I.

ORG: None

TITLE: A mechanism for forced impact destruction of a diaphragm. Class 47, No.
188810

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 22, 1966, 140

TOPIC TAGS: pneumatic device, gas pressure

ABSTRACT: This Author's Certificate introduces a mechanism for forced impact destruc-
tion of a diaphragm. The unit consists of a striker and a ball catch which holds the
striker in the cocked position. The kinetic energy of the striker is increased by
rigid connection to a piston which uses gas pressure to move the striker after the
ball catch is released.

Card 1/2   UDC: 621.646.824:621.646.38

ACC NR: AP7000365
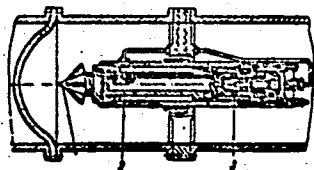
1—striker; 2—piston; 3—ball catch

SUB CODE: 13/ SUBM DATE: 01Feb65

Card 2/2

BOYKO, Ivan Ivanovich, kand. sel'khoz. nauk; BUYANOV, Vasiliy
Andreyevich, inzh.; FILIN, A.G., red.; BODANOVA, A.P., tekhn.
red.

[Freight haulage with tractor trains]Perevozka gruzov avto-
poezdami; opyt maiakov-avtotransportnikov. Moskva, Avto-
transizdat, 1962. 106 p.   (MIRA 16:1)
                    (Tractor trains)
              (Transportation, Automotive)

BOYKO, I.L., glavnyy veterinarnyy vrach Noginskogo rayona, Moskovskoy oblasti.

Incorrect references. Veterinariia 34 no.3:87-88 Mr '57. (MIRA 10:4)
(Artificial insemination)

Boyko, I. N.

Subject   : USSR/Mining

Card 1/1   Pub. 78 - 7/26

AID P - 1769

Author   : Boyko, I. N.

Title   : Study of oil producing and injection wells in Tuymazy
(Bashkirya)

Periodical : The organization of brigades testing oil producing and
injection wells is described, as well as their equipment
and the methods used for determining various data on
well pressures, water levels, coefficients of
productivity and of permeability, core analysis, etc.
Charts

Institution: Control and Measuring Instrument Shops KIP;
(Central Scientific Research Laboratory) TsNIL

Submitted : No date

BOYKO, I.N.

Investigation of petroleum and pressure wells in Tuymazy. Neft.
khoz. 33 no.3:29-34 Mr '55.   (MLRA 8:6)
        (Tuymazy--Oil wells) (Tuymazy--Gas, Natural)

BOYKO, I.N.

    Reciprocating scraper. Neftianik 2 no.8:20-21 Ag '57. (MIRA 10:10)

    1.Nachal'nik tsekha kontrol'no-izmeritel'nykh priborov upravle-
niya Tuymazaneft'.
                (Pipes, Deposits in)

BOYKO, I.N.

BOYKO, I.N.

Press for calibrating dynamographs. Neftianik 2 no.9:21-22 S '57.
(MIRA 10:9)
1. Nachal'nik tsekha kontrol'no-izmeritel'nykh priborov Nefte-
promyslovogo upravleniya Tuymazaneft'.
(Dynamometer)

BOYKO, I.N.

Indicators of automatic waste-water discharge. Neftianik 7
no.9:20-21 S '62.   (MIRA 16:7)

1. Nachal'nik tsekha kontrol'no-izmeritel'nykh priborov i
avtomatiki neftepromyslovogo upravleniya Tuymazinskogo tresta
neftyanoy promyshlennosti.
          (Tuymazy region--Petroleum--Desalting)
          (Liquid level indicators)

BOYKO, I.N.; LEPESHKINA, V.T.

Important possibilities for increasing protein-rich feeds.
Zemledelie 25, no.2:38 F '63.   (MIRA 16:5)

1. Kafedra zemledeliya Melitopol'skogo instituta mekhanizatsii
sel'skogo khozyaystva.
                              (Peas)

BOYKO, I.S.

Field studies of wind currents along the shores near where there is deep water in the Kayrakum Reservoir. Trudy GGI no.98:247-262 '62.

(MIRA 15:12)

(Kayrakum Reservoir—Ocean currents) (Winds)

BOYKO, I.T.; DYATEL, M.P., mekhanik

Self-propelled vibration table. Suggested by I.T. Boiko, M.P.;
Diatel. Rats.i izobr.predl.v stroi. no.13:7-8 '59. (MIRA 13:6)

1. Nachal'nik Reutovskogo tsekha kombinata "Stroydetal'" tresta
No.27 Glavmosoblastroya, stantsiya Stroyka, Moskovskoy oblasti
(for Boyko). V. Reutovskiy tsekh kombinata "Stroydetal'" tresta
No.27 Glavmosoblstroya stantsiya Stroyka Moskovskoy oblasti (for
Dyatel).

(Vibrators)

BoYKo, I. V.

15-57-3-3787D

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 3,
            p 187 (USSR)

AUTHOR: Boyko, I. V.

TITLE: A Study of the Relationship of Phase Composition and
               Mechanical Properties of Frozen Ground to Temperature
               and Pressure (Issledovaniye zavisimostey fazovogo
               sostava i mekhanicheskikh svoystv merzlykh gruntov ot
               temperatury i davleniya)

ABSTRACT: Bibliographic entry on the author's dissertation for
               the degree of Candidate of Geological and Mineralogical
               Sciences, presented to the Vses. n.-i. ugol'n. in-t (All-
               Union Scientific Coal Institute, Moscow, 1956

ASSOCIATION: Vses. n.-i. ugol'n. in-t (All-Union Scientific Coal
               Institute), Moscow

Card 1/1

BOYKO, I-V.

Electrochemical cementation of clayey soils. I. V.
Boiko. _Zhur. Priklad. Khim._ 29, 473-6(1956).—To det.
the feasibility of strengthening the soil of existing foundations by electrochem. methods, the following expt. was made: The soil was satd. with a $CaCl_2$ soln. through hollow, perforated electrodes buried in the soil. As the current (d.c.) passed through the soil, Ca^{++} pptd. near the cathode and this precathodic alk. zone spread until the process was stopped by the increased elec. resistance. With anodes placed in perforated, nonmetalic boxes filled with a mixt. of $CaCl_2$ + CaO the initial acidity of the preanodic space was neutralized and, gradually, the entire space between the electrodes was filled with CaO; this was more complete and more rapid on the surface than in depth. A block of 150 l. required 30 days at the expense of 1500 kw. hrs./cu. m! at a c.d. of 5-7 ma./sq. cm. initially and 1-2 ma./sq. cm. at the end. The d. of the finished material was 1.60-1.75 and it absorbed 20-5% of its wt. of H_2O. However, its strength after 13 months in water remained unchanged and on steaming for 12 hrs. at 85-90° it increased to 32.6 kg./

BOYKO, I. V.

Electrochemical cementation of clayey soils. I. V. Boiko. *J. Appl. Chem. U.S.S.R.* 29, 517 19(1956)(Engl. translation). See C A 50, 14156. R. M. R.

BOYKO, I. V.

BOYKO, I. V.: "Investigation of the phase state and the mechanical pro-
    perties of frozen soil as a function of temperature and pressure."
    Min Coal Industry USSR. All-Union Sci Res Coal Inst. Pechora Af-
    filiate. Moscow, 1956. (Dissertation for the Degree of Candidate
    in Geologicomineralogical Science.)

So: Knizhnaya letopis', No. 37, 1956. Moscow.

BOYKO, I. V.

   "Investigations of the Dependence of the Phase Composition and the
Mechanical Properties of the Frozen Soil on Temperature and Pressure. "

dissertation defended for the degree Cand. of GeologicalMineralogical Sci.
at the Permafrost Inst. im V. A. Obruchev (Jan-July 1957)
Defense of Dissertations
Sect. of Geological -Geographical Sci.
Vest. Ak Nauk SSSR, , 1957, Vol. 27, No. 12, pp. 113-115

Воуко , i. v.

BOYKO, I.V.

Properties of frozen loose rock. Shakht.stroi. no.10:8-13 O '57.
(MIRA 10:12)

(Mining engineering--Cold weather conditions) (Frozen ground)

Boyko, I. V.

PHASE I BOOK EXPLOITATION   SOV/2843

Soveshchaniye po ratsional'nym sposobam fundamentostroyeniya na vechnomerzlykh gruntakh

Trudy... (Transactions of the Conference on Efficient Methods of Building Foundations on Permafrost Soils) Moscow, Gosstroyizdat, 1959. 131 p. Errata slip inserted. 1,200 copies printed.

M. of Publishing House: E. M. Bondobavenkaya; Tech. Ed.: Ye. L. Temkina.

PURPOSE: This book is intended for construction engineers, industrial planners and builders.

COVERAGE: This book contains reports originally read in Vorkuta in 1958 on experience gained in planning and building foundations in permafrost regions of the USSR. The reports were prepared for publication in the NIIOSP (Scientific Research Institute for the Study of Foundations and Underground Structures). The introduction was written by Professor V. G. Bulychev. No references are given.

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AVAILABLE: Library of Congress

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MM/mm
1-18-60

BOYKO, I.V.

Theory of the field effect. Fiz.tver.tela 1 no.1:13-15 Ja '59.
(MIRA 12:4)

(Field theory)

BOYKO, I.V.

Adding salt to soil as a method of preventing frost heave of foundations. Osn., fund. i mekh. grun. 4 no.6:13-15 '62.
(MIRA 16:1)

(Frozen ground) (Foundations) (Salt)

BOYKO, I.

Some notes on the project of a continuous corn receiving and processing line. Muk.-elev. prom 29 no.3:19 Mr '63.   (MIRA 16:9)

1. Odesskoye upravleniye khleboproduktov.

BOYKO, I.

Waterproofing and water lowering in the construction of the foundation
ditches of motortruck scales. Muk.-elev. prom. 29 no.11:28 N   63.
(MIRA 17:2)

1. Odesskoye upravleniye khleboproduktov.

BOYKO, I.V.

Heat and humidity conditions of the air in mines of the Vorkuta deposit. Trudy SOIM no.2:51-58 '62.   (MIRA 17:1)

L 40720-65

ACCESSION NR: AP5012180   UR/0066/64/000/005/0024/0026

AUTHOR: Boyko, I. V. (Candidate of geological and mineral sciences); Shchelokov,
V. K. (Candidate of technical sciences)

TITLE: Icehouses equipped with mechanical cooling

SOURCE: Kholodil'naya tekhnika, no.5, 1964, 24-26

TOPIC TAGS: refrigeration engineering, refrigeration equipment, cryogenic
engineering

ABSTRACT: The use of natural ice for refrigeration purposes is widespread
in the USSR, being favored by the cold climate. Cold storage on this basis
has been successful throughout the central USSR, in the case of potatoes,
vegetables, fruits, berries, certain dairy products, and various salted and
pickled products. However, this method is not adequate to maintain the
necessary temperatures (below 0-2°) for prolonged summer storage of frozen
meat, fish, butter and other basic food products; in addition, it entails
sanitation difficulties, while the service life of an installation is
usually no more than 20 years, and constant repairs are needed.

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ACCESSION NR: AP5012180

Along with improvement of existing ice cold-storage plants, it was suggested that large-scale icehouses be built which will be equipped with mechanical cooling accessories. The model plant based on this principle was the one at Vorkuta, constructed on the basis of V. M. KRYLOV's system. Here, instead of dispersed ice-brine cooling, there was a single brine bath located near the entrance; through this passed the incoming air for initial cooling, after which it moved on to the functional chambers. During the summer months the air in the latter was maintained at -1° to -1.5°. One of the authors of the present article suggested the introduction of mechanical coolers for perishable foods; a plan for this innovation was worked out by "Vorkutaugol'" and the plant was re-equipped accordingly. As now constituted, the Vorkuta cold-storage plant consists of an ice massif enclosing eight chambers and a wooden entrance-chamber; the earlier bath chamber now serves as additional storage space. The plant holds 150 tons. The ice massif is covered with cinders and sawdust (1.5 m). The shell of the entrance-chamber is cinder-filled; it is cooled by an ice-brine mixture. The mechanical accessories are housed in a small contiguous structure; they include an ammonia compressor (21V-15; rating 50,000 kcal/hr; 480 rpm), an element condenser 16 KE, and a vertical-pipe vaporizer, 20IA, with 20 m^2 cooling surface.

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L 40720-65

ACCESSION NR: AP5012180

Brine is delivered from the machine house to the refrigeration area through wood-encased pipes, further insulated by mineral wool. To avoid damage to the pipes from deformation of the ice mass, they are not attached to the walls, but to special holders frozen into the ice floor. Total cooling surface of all pipes is about 140 m^2. Jointless, 57 mm pipe is used; the main conduit is 85 mm.

The overhauled Vorkuta plant began operation in the summer of 1963. The mechanical cooling makes it possible to maintain a temperature of -7° to -8° within the chambers, when the outside air temperature is above 20°.

It is estimated that an ice-mechanical plant of this type costs less than a third of the investment needed for a conventional cold-storage plant. Such installations would be particularly valuable in remote agricultural districts, where they could be powered by truck or tractor motors in the absence of a central power station. Orig. art. has: 2 figures.

ASSOCIATION: Institut merzlotovedeniya im. V. A. Obrucheva (Institute of Geo-cryology)

SUBMITTED: 00

NO REF SOV: 000

ENCL: 00

OTHER: 000

SUB CODE: IE

JPRS

Card 3/3

BOYKO, I.V.

Possibility of using soil cement from local materials in mine construction in the Pechora coal basin. Trudy SOLM no.1:108-115 '60.   (MIRA 14:11)
    (Vorkuta region--Coal mines and mining)
                    (Soil cement)

Boyko, I. Z.

USSR/ Miscellaneous – Political history

Card 1/1   Pub. 138 – 6/10

Authors   : Boyko, I. Z.

Title   : Russian and Ukrainian writers on the union of the Ukraine with Russia

Periodical   : Visnik AN URSR 1, 56-67, Jan 1954

Abstract   : Review is presented of the numerous articles, books and poems, written
               by Ukrainian and Russian writers on the subject of the Ukrainian-Russian
               union since 1654.

Institution: .....

Submitted: .....

KAL'CHENKO, N.; BOYKO, K.

Council of Ministers of the Ukrainian S.S.R., regulation No.1213, July 27, 1960: "On transferring the provincial administration of pharmacies to the jurisdiction of the health departments of the province executive committees". Farmatsev. zhur. 15 no.6:3 '60.

(MIRA 14:11)

1. Predsedatel' Soveta Ministrov USSR (for Kal'chenko). 2. Zaveduyushchiy delami Soveta Ministrov USSR (for Boyko).

(UKRAINE--PHARMACY)

L 48307-65   EWT(d)/EPA(s)-2/EWT(m)/EPF(n)-2/EWG(m)/EWA(d)/EWP( )/T/EPR/EWP(t)/
EWP(k)/EWP(h)/EWP(z)/EWP(b)/EWP(l)/EWA(c)   Pf-4/Ps-4/Pu-4   IJP( )   JD/HM/HW/JG
ACCESSION NR: AP5009677   UR/0135/65/000/004/0042/0045

AUTHOR: Boyeva, K. I. (Engineer)

TITLE: Welding equipment at the 1964 Exhibition of the Achievements of the National
Economy of the USSR

SOURCE: Svarochnoye proizvodstvo, no. 4, 1965, 42-45

TOPIC TAGS: welding equipment, TIG welder, automatic curvilinear seam welder,
plasma metallizing gun, friction welder, light alloy spot welder, stored energy
spot welder

ABSTRACT: Welding equipment shown at the 1964 Exhibition of the Achievements of
the National Economy of the USSR included: 1) a TIG welder for automatic welding in fixed
position of the joints of alloy steel pipelines 8—35 mm in diameter with a wall
thickness of 1—2 mm. VT15 or VL Tungsten electrodes are used in welding with no
filler wire. A modernized VCC-120 welding rectifier supplied short-pulse welding
current. 2) An AZ-1 unit for automatic welding of thin-wall structures with
curvilinear joints located along the surfaces of bodies of rotation in an inert gas
atmosphere. The unit can weld parts with a minimum inside diameter of 260 mm and
a maximum outside diameter of 780 mm. 3) A UPU-2M gun for plasma-jet metallizing

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ACCESSION NR: AP5009677

the inner and outer surfaces of bodies of rotation and flat parts with refractory metals. The plasma gun consumes 15—40 kv at a maximum current of 500 amp; the 0.8—1.2 mm metallizing wire is fed at a rate of 25—40 m/hr. 4) Minsk Tractor Plant showed an SMST-13 machine for friction welding of carbon and low-alloy steel parts of up to 1000 mm² cross section. The parts to be welded are clamped by a push-button controlled pneumatic device and rotated in the vertical plane. The machine develops a maximum pressure of 12 tons and makes 75 weldments per hour. 5) The Izhevsk Machine Building Plant exhibited a TTM-1 unit for spot welding of light alloy parts 1.5 + 1.5 mm thick. The machine has a 1000 kva welding transformer; the electrodes are cleaned automatically. 6) The VNIIESO exhibited an automatic MTPU-300 spot welder for parts made of light alloys and titanium, and of low-carbon, heat resistant, hardenable, and stainless steels. The 300 kva spot welder has a nominal current of 32,000 amp, develops a 1500 kg pressure, the electrode tips, and welds light alloy parts 0.3 + 0.3 mm thick, and titanium or steel parts from 0.5 + 0.5 to 3 + 3 mm thick. 7) An MTK stored-energy welder for resistance spot welding of parts made of light alloys, brass, and titanium, and of low-carbon, heat-resistant, or stainless steel. Machines of this type consume 5—20 times less electric power than other resistance welder designed for the same purpose. 8) A PTB-210 semi-automatic unit for resistance spot welding and assembly of battery plates into batteries. This 1 kva unit develops a pressure of 2—4 kg at the electrode tips and produces up to 170 batteries per hour. Orig. art. has 14 figures. [MS]

Card 2/3

PANCHENKO, I.D.; BOYKO, K.M.

Use of various electrode materials in the polarography of fused
salts. Ukr.khim.zhur. 31 no.2:190-194 '65.

(MIRA 18:4)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.

KAMYSHEV, N.S., otv. red.; BOYEVSKIY, A.S., red.; VIKTOROV, D.P.,
     red.; DEYSLE, V.F., red.; SKRYABIN, M.P., red.

[Studies of the Voronezh section of the All-Union Botanical
Society] Nauchnye zapiski Voronezhskogo otdeleniia Vsesoiuz-
nogo botanicheskogo obshchestva. Voronezh, Izd.-vo Voronezh-
skogo univ., 1964. 106 p.   (MIRA 18:5)

1. Vsesoyuznoye botanicheskoye obshchestvo.

DELIMARSKIY, Yu. K.; KAPTSOVA, T. N.; BOYKO, K. M.

Polarographic investigation with fused sodium metaphosphate as
the support. Ukr. khim. zhur. 28 no.5:595-599 '62.
(MIRA 15:10)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.

(Polarography)   (Sodium metaphosphate)

L 08454-67   EWT(m)/EWP(t)/ETI   IJP(c)   JD/WW/HW/JG/WB

ACC NR: AP6030897   (A)   SOURCE CODE: UR/0080/66/039/008/1737/1742

AUTHOR: Delimarskiy, Yu. K.; Boyko, K. M.

ORG: Kiev State University imeni T. G. Shevchenko (Kievskiy gosudarstvennyy universitet)

TITLE: Polarographic study of the corrosion rate in salt melts

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 8, 1966, 1737-1742

TOPIC TAGS: carbonate, nickel, copper, corrosion rate, polarographic analysis

ABSTRACT: The corrosion of nickel and copper in the molten eutectic K_2CO_3 (64 mole %) - Li_2CO_3 (36 mole %) was studied at 640°C by a polarographic technique. After the Ni or Cu specimen had been immersed in the melt for various periods of time, it was removed, and the Ni or Cu content of the corrosion medium was determined polarographically. It was found that both Ni and Cu pass into the melt in the form of divalent ions. The corrosion rate was determined from the height of the polarographic waves. A satisfactory agreement was found between the polarographic and photometric data on the corrosion resistance of the two metals. The corrosion of Ni and Cu is due to the formation of NiO and CuO, and their dissolution in the melt. The faster corrosion observed at the start is probably due to the dissolution of oxide film already present on the specimens. One of the reasons for the appearance of oxides in the carbonate melt may be the high-temperature reaction of nickel and copper with oxygen dissolved

Card 1/2   UDC: 543.253+620.191/.193

L 08454-67

ACC NR: AP6030897

in the melt. Orig. art. has: 2 figures, 3 tables and 1 formula.

SUB CODE: 07,11/ SUBM DATE: 19Mar64/ ORIG REF: 005/ OTH REF: 004

Card 2/2

BOYKO, K. S.

PHASE I BOOK EXPLOITATION   1194

Boyko, Konstantin Semenovich

Khozraschet na promyshlennom predpriyatii (Cost Accounting in Industrial Enterprises)
    [Moscow] Moskovskiy rabochiy, 1957. 110 p. 7,000 copies printed.

Ed.: Chernov, Ye.; Tech. Ed.: Yegorova, I.

PURPOSE: This book is intended for industrial workers.

COVERAGE: The book briefly reviews some cost accounting problems involving materiel
    and technical supply, fiscal operations, actual expenditures per unit of product-
    ion, profitability, capital assets, turnover tax, etc. of a Soviet industrial
    establishment. No personalities are mentioned. There are no references.

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